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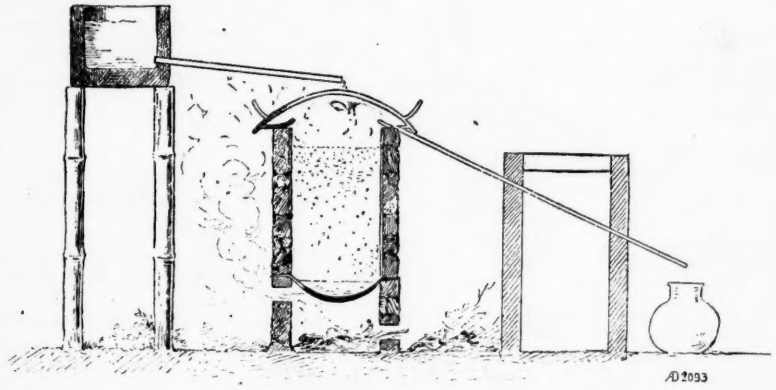
STAR ANISE AND ITS OIL.

DOCTOR P. NEIS, a French traveller and commissioner to Tonquin, writing in 1888, speaks as follows of the cultivation of star anise in that region:

The *Illicium Anisatum*, or star anise, is a charming Magnoliaceæ which is said to be of spontaneous growth in some of the forests of Tonquin, but is usually seen as cultivated by the Thôs upon hillsides. It is a tree of 10 to 15 M. height, with evergreen leafage, like a large myrtle, of pyramidal form, with straight branches, and with leaves at the extremities of the twigs only. The culture of this tree is the source of the prosperity of the country, owing to the value of the oil, or, more especially, of the essence extracted from its fruits. The whole plant exhales a strong odor of anise. The very odorous flowers appear in January in form of little white bunches at the extremity of the branches. The fruit forms and enlarges rapidly, but ripens slowly, accumulating its oil in the woody husk surrounding the seeds. In June or July the fruit is ripe, but for several years (probably owing to the insecurity of the peace of the country) the cultivator has had to realize as quickly as possible the value of his crop, and the harvest is often made while the fruit is still green. This custom is quite as prejudicial to the interests of the purchaser as of the producer, and should be corrected.

While the Thôs cultivate the star anise, they always sell the fruit to Chinese, who alone have a monopoly of the manufacture of the essence. These Chinamen establish themselves during the summer in the regions where the tree grows, and remain only during the time required for extracting the essential oil. They are mostly natives of the Province of Kouang-si, and bring with them the necessary apparatus, or at least a kettle, deriving the other portions of their still from the neighborhood. The essence having been acquired, they go by way of That-ké to Canton.

A diagram of one of these primitive Chinese stills for star-anise oil is shown, and is a striking illustration of the adaptation of common materials. No doubt their rude construction is the occasion of considerable loss and that improved appliances would be used were the distillers less transitory in their habits. The essential element seems to be a shallow metal kettle or basin to withstand the direct heat of the fire. This is placed as a diaphragm in a cylindrical structure of masonry which is cemented upon its inner surface. A hood, likewise of metal, is placed loosely upon the top, and has an outside gutter to retain water, and an inside gutter to collect the condensed oil. A tube of bamboo conducts cold water from any convenient source to the still head and another carries off the oil, the support for the latter serving also as an additional cooler for the discharge pipe. We venture the assertion that in this apparatus simplicity of construction has reached its lowest limit, and is not likely to be outdone even by a Chinaman.



Chinese Still for Star Anise.

Note on Digitalein.—The composition of digitalein is $C_{52}H_{82}O_{24}$. Its most characteristic property is the following: If we add amylic alcohol to an aqueous solution of digitalein, there is rapidly produced an abundant crystallization. Digitalein crystallized in ordinary alcohol loses its water and its alcohol at 110° C. It dissolves slowly in cold water, but rapidly in boiling water. In absolute alcohol it is very sparingly soluble. It deflects the plane of polarization to the left. It dissolves in hydrochloric acid without becoming colored, but if the solution is heated it turns to a reddish violet, with a slight green fluorescence. Dilute acids split it up into two glucosides without liberation of glucose.—J. HOUDAN in *Compt. Rend.* and *Chem. News.*

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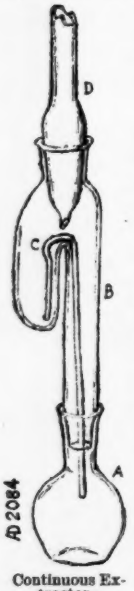
A NEW CONTINUOUS EXTRACTOR.

J. T. Williams and G. H. Failyer describe an improved extractor in the *Chemical News* (October 16th) as follows:

Before describing our apparatus, a few words in justification of its invention, notwithstanding the many forms already proposed, may not be out of place. First, we are led to reject any extractor which makes *cork* connections. The extreme difficulty of completely freeing cork from its resinous constituents can be appreciated only by one who has extracted the properly perforated corks for one hundred hours or more in a large Soxhlet's extractor, and at the end of that time has still found appreciable quantities of extract. Then, too, the more perfectly a cork is exhausted the less suited does it become mechanically, for use, losing its toughness and elasticity. Second, a siphoning apparatus must be preferable to a percolating, because we are certain that every particle of the substance is soaked by fresh solvent every time the container is filled, while in a percolating apparatus we can never be quite sure that the solvent is not chiefly flowing down channels of least resistance and leaving portions of the material comparatively unacted upon.



Continuous Extractor.

Soxhlet's extractor, when made with ground joints, will doubtless give good satisfaction. The form we are about to describe has, however, the advantage of greater simplicity, and is consequently cheaper and less liable to fracture. By reference to the cut it will be seen that our extractor consists of four parts, viz.: the flask, A; the containing tube, B; the condensing tube, D; and the siphon, C. The flask is small, holding about 100 Cc. and weighing about 20 Gm. The containing tube is ground into the neck of the flask, and has a pocket on one side, in which the substance, enclosed in a sack formed of fat-free filter paper, is placed for extraction, and into which the short arm of the siphon dips. The condensing tube expands to a stopper for the containing tube, and at the lower end is drawn out and ground off in such a way as to direct the condensed solvent into the pocket containing the substance for analysis. The upper part of the condensing tube passes through a cold-water jacket of some kind; ours is a copper tank large enough for six extractors.

The siphon is made of small tubing, the inside diameter being about 2 Mm. At the bend it must be less, but must not be constricted so much as to greatly impede the flow of the liquid through. The capillary attraction exercised by the inner wall of the siphon raises the liquid sufficiently to bring the siphon into action before the pocket is full enough to run over. The upper end of the short limb of the siphon must not be too close to the side of the pocket, or the capillary action of the outside of the siphon and the side of the pocket will draw the liquid over without filling the siphon. To prevent this, the siphon may be bent sharply away from the wall of the pocket, as shown in the cut, or the wall itself may bend away at that point. If these details be met in the construction of the siphon, it will empty the pocket promptly, and the apparatus will require no attention after the flame is adjusted under the water bath.

The apparatus is so constructed that the siphon may be easily removed, and when the extraction is concluded the substance and the siphon are removed and the solvent distilled up into the pocket. If too large an excess has not been taken, the removal of the siphon and the substance will give ample capacity to the pocket to receive the solvent remaining. The drying of the extract is completed in hydrogen as usual. The extractor, as figured, was constructed for the quantitative analysis of feeding stuffs. The containing pocket was therefore made small to insure quick siphoning and to require but little absolute ether. It is, however, apparent that, within certain limits, the apparatus might be made of considerable size. We have more recently had a number constructed especially for milk analysis. In these the containing pocket is made large enough to admit the paper coil upon which the milk is dried, if Adams' method is employed, or a drying tube filled with asbestos when desiccation is effected upon that substance. These extractors are each provided with two flasks, thus doubling their efficiency and enabling one to keep them all in constant service. Our extractors are so arranged that each set of six is heated by a single water bath. This consists of a flat copper box.

The extractors are held up in place by strong spiral brass springs. Each spring has a piece of brass gauze soldered across the upper coil. The diameter of the coil is greater than that of the bottom of the flask. The springs, while rather stiff, must be so adjusted in length as to require but little compression to bring them in position.

We have used the extraction apparatus above described in the analysis of feeding stuffs for over a year and a half with the greatest satisfaction.

Fitted with two flasks, and charged with absolute ether, which is protected by a calcium chloride tube in the upper end of the condensing tube, the apparatus seems to us to leave little to be desired in simplicity or perfection of action.

[*Note.*—Mr. J. T. Crowley, in *Am. Chem. Journ.*, vol. xi., p. 507, has described an apparatus employing capillary attraction to bring the siphon into action. It seems right to say that our extractor was designed before the publication of this article.—Ed. Am. Drugg.] [2084

Gas Heater and Hot-Air Bath.

GAS HEATER AND HOT-AIR BATH.

In order to more fully utilize the heating effect of a gas burner, the gas oven here illustrated has been devised. In the first place, the flame is not a single jet, but consists of four divergent jets. Moreover, the oven is surrounded by a mantle, which helps to store up and distribute the heat more uniformly. The gas inlet is covered with porcelain, so as to avoid the contact of rubber tubing with heated metal. Kaehler & Martini, of Berlin, are the makers.—*Zeitsch. f. angew. Chem.* [2092

A SIMPLE METHOD OF WASHING READILY OXIDIZABLE PRECIPITATES.

HAVING occasion recently to prepare carbonate of iron for a special purpose, I noticed that the precipitate obtained by following the Pharmacopœia process for the preparation of the saccharated carbonate, became darker in color each time the vessel was filled up with water; and if the washing was carried further than directed in the Pharmacopœia, so as to eliminate all alkaline sulphate, the resulting carbonate was of a dirty greenish-brown color. As freshly precipitated ferrous carbonate is of a pale-gray—almost white—color, the above result points to atmospheric oxidation, probably by means of oxygen taken up while the vessel is being filled with water, and also during the stirring-up of the precipitate; and, with the view of obviating this, I devised the wash bottle here illustrated, by means of which oxidation at this stage of the process is reduced to a minimum. A wide-mouthed bottle of convenient size is fitted with a cork carrying four glass tubes (A, B, C, and D). The

Forret's Wash Bottle.

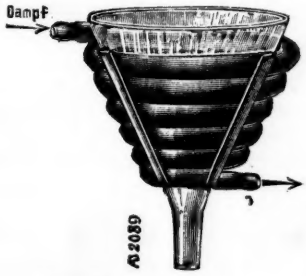
tube C is prolonged inside the bottle, and to the other end is attached a longer piece of glass tubing, by which the water is siphoned off, C being raised or lowered according to the depth of the precipitate. To the tubes A and B are attached short lengths of rubber tubing, and A is connected with a siphon dipping into a vessel of water (recently well boiled, to insure thorough de-aëration) placed on a level above the wash bottle. The remaining tube (D) is connected either with the gas supply or an apparatus for generating carbonic acid gas. The apparatus is used as follows: A convenient quantity of crystallized ferrous sulphate is placed in a muslin bag, and suspended in a wide-mouthed bottle containing a sufficient quantity of boiled water, and allowed to dissolve without shaking or stirring. Alkaline carbonate in slight excess (potassium bicarbonate I have found most convenient) is placed in the wash bottle and the bottle corked. The tubes A and C are closed by means of pinchcocks, and a current of coal gas or carbonic anhydride passed through the bottle for a few minutes to displace atmospheric air. A sufficient quantity of boiled water is run into the bottle by the siphon attached to the tube A, and the carbonate dissolved by gentle agitation. When both salts are dissolved the ferrous sulphate solution is gradually added to that in the wash bottle by the tube A, and the bottle filled up with water. At this stage the ferrous carbonate is a flocculent, grayish-white precipitate, and by placing the bottle in hot water for a few minutes the precipitate assumes a much denser consistence and rapidly falls to the bottom. The solution of potassium sulphate is now run off by means of the siphon C, and the bottle filled up with boiled water as before. A few minutes suffice for the settling of the precipitate, and the operation is repeated until the washings indicate but a trace of the sulphate. The entrance of atmospheric oxygen is prevented by causing a gentle current of gas to pass through the bottle while in use.

Carbonate of iron prepared by this means is of a pale-gray color with just a tinge of green; and if the washed precipitate be treated as directed for the saccharated carbonate, the resulting preparation indicates a considerably higher percentage of ferrous carbonate than the average commercial sample of that article.

The apparatus would be suitable for washing other readily oxidizable precipitates. With iron carbonate it is advantageous to have the alkaline carbonate in slight excess of what is necessary for complete decomposition of the iron sulphate; and a much lighter colored precipitate is obtained by adding the sulphate to the carbonate than the carbonate to the sulphate.—J. A. FORRET in *Pharm. Journ.* [2077

NEW STOPPER FOR REAGENT BOTTLES.

A. GAWALOWSKI uses reagent bottles having stoppers like that shown in the cut. The stopper has a broad head, acting as a sort of guard against the collection of dust upon the mouth or edge of the neck of the bottle. The stopper itself and the inside of the neck are not left rough, but are polished, which prevents the permanent lodgment of the stopper. The inner end of the stopper is pointed. A short distance from the end a small notch or cavity is ground in, which serves to withdraw the contents in drops when required.—After *Chem. Centralbl.* [2098



Funnel for Hot Filtration.

Gawalowski's Stopper for Reagent Bottles.

FUNNEL FOR HOT FILTRATION.

KAEHLER & MARTINI are the makers of an improved coil for heating funnels for hot filtration. The coil (see cut) consists of a worm of brass pipe, coiled in form of a cone having an angle of 60°, so as to adapt itself closely to glass funnels of the same angle. The coil is intended to be charged with steam, the main object in devising it being to supply a hot filtering apparatus which would not require heating by a flame, since many volatile, inflammable liquids could not well be filtered in proximity of a flame without risk of danger.—*Zeitsch. f. angew. Chem.* [2089

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A SUBSTITUTE FOR WOULFF'S BOTTLES.

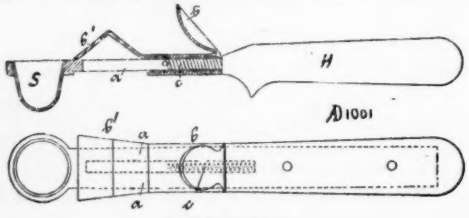
THEODORE GROSS recommends to replace the well-known Woulff's bottle, for washing gases, by a long glass tube inserted into another, as shown in the cut. For different purposes, the size of the tubes is proportionately altered. The inner tube has near its end a num-

Gross' Substitute for Woulff's Bottle.

ber of perforations, through which the gas passes into the wash liquid contained between the inner and outer tube. The washing is most thorough, since the gas is compelled to pass through a long column of liquid, and yet the pressure is but trifling, since the column of wash liquid is horizontal instead of vertical.—After *Chem. Zeit.* [3002

MEASURING SPOON.

WHEN samples of one and the same substance are to be frequently taken, each of about the same amount or weight, the measuring spoon shown in the accompanying cut will be found very convenient. When the spoon is grasped by the handle (H), the thumb is

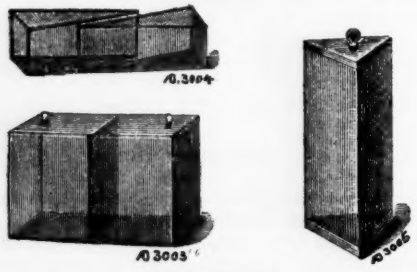


Measuring Spoon.

placed against the guard *b*, the spoon itself (S) dipped into the substance, and by pressure of the thumb against the guard the metallic plate *b'* pushed forward across the spoon, removing all excess of the substance. In this way the same amount of the latter may be measured out in rapid succession, one hand alone being engaged.—After *Dingler's Pol. Journ.*, 282, 144. [3001

NEW GLASS VESSELS.

THE firm of E. Leypold's Successors ("E. Leypold's Nachfolger"), in Cologne, has put on the market a variety of new glass vessels made of polished plate glass



New Glass Vessels.

cemented together in the form of prisms, and other forms bounded by flat sides, by means of a new cement which remains unaffected by nearly all chemical reagents, and is even able to bear a heat up to 400° C. without fusing. A few of the vessels are shown in the accompanying illustrations. They may be obtained through importers of chemical apparatus.—After *Chem. Zeit.* [3003-4-5

Spurious Drugs Recently Met With.

THE following is taken from a paper by T. H. Wardleworth, read at a meeting of the Liverpool Chemists' Association on November 12th (after the *Chem. and Drugg.*):

The first specimen shown is one of *Jalap*, and represents a parcel recently imported here. Its original source is not known, as it was forwarded by a firm of New York druggists to this port. Upon being brought here it was at once seen that it differed from the true jalap (*Ipomœa Purga*). Although somewhat similar in appearance, it is lighter in weight and the fissures are more strongly marked than in the true drug. It will be observed that in the samples shown one of the tubers has been cut so as to show the structure, and it will be seen that there is an entire absence of the horny and resinous characteristics which mark the *Ipomœa Purga*. The interior is distinctly fibrous and starchy, and is lacking the necessary faint, rather coffee-like odor. It is said, however, to possess in a slight degree the therapeutic properties of the genuine drug.

As no buyer could be found for it, it was shipped back to the United States. Bearing in mind that such frequent reference is made to the system of inspection which exists in New York and other American ports, with the view of detecting and rejecting spurious drugs, it is somewhat interesting to note that this parcel must have passed into America in the first instance without being detected, was exported, and again reimported without any apparent trouble. This and similar instances where spurious drugs have passed the New York customs have the tendency to shake one's faith in the efficacy of such a system of inspection—at least, so far as America is concerned. . . . *

The sample of *Calabar Beans* exhibited represents a large parcel which has been lying here [at Liverpool] for some years. It was imported at the time when the genuine Calabar bean was fetching from 4*s.* to 5*s.* per pound. When the parcel first arrived, the merchant was under the impression that his goods were of considerable commercial value. He had samples drawn from the bulk and placed in stoppered glass bottles, which were deposited in his own private office. This done, a buying broker was invited to inspect his treasure, and the merchant's feelings may be better imagined than described when he was told that his so-called Calabar beans were not Calabar beans at all and possessed no commercial value. As will be seen by inspection, they differ in shape from the *Physostigma venenosum*, but resemble it somewhat in color and structure, and are no doubt the beans of a species of *Mucuna*, probably *Mucuna urens*. They are now known on the market as "sea beans" or "horse-eye beans," the latter being a good case of analogous naming. The parcel has failed to find a buyer in the Liverpool market, and its ultimate destination it is impossible to predict.

False *Croton Seeds* are old friends: they seem to reappear with great regularity in small lots of two or three bags at a time. They have played a more important part in the history of the commerce of Liverpool in the past than they do now. When first introduced under the name of "Croton nuts," much mischief was caused. The men employed in unlading the ships, misled by the term "nut" and finding them sweet to the taste, ate them with distressing results, many having to be taken to the hospitals. The oil used to be expressed in years past for lighting and cloth-dressing purposes, but its highly drastic properties render it very unsuitable for the latter purpose, as it is apt to cause trouble among workpeople who are not careful in its use. The seeds shown are those of the *Jatrophe Curcas* (Nat. ord. Euphorbiaceæ), and are now always imported under the name of "Croton seeds,' being intended to represent the true *Croton Tiglium*. [We print this latter statement as we find it in the origi-

* NOTE.—As it is quite the fashion now in England to make statements derogatory to the customs service of this country, we suggest that our readers will do well to remember that our system of drug inspection was established to prevent foreign dealers from dumping their refuse into our warehouses. It has thus far accomplished its purpose very satisfactorily from *our* point of view, but not from *theirs*, and such criticisms as the above are to be expected. It is also questionable whether this batch of tubers really passed inspection here. The fact that it was sent to England would indicate that it did *not*, but was exported from the bonded warehouse by the New York consignee, because the customs inspection did not allow it to come into the market.—ED. AMER. DRUGG.

nal. We do not believe, however, that the author meant to say that these seeds are used by any reputable dealer or manufacturer of the oil in place of the true seeds of *Croton Tiglium*.—ED. AMER. DRUGG.]

A sample of *Balsam of Copaiba* exhibited here represents a variety which has appeared from time to time during the past twelve months as "African balsam copaiba." In consequence of the paucity of the information as to its origin, it would be unwise to say at once that it is spurious; at the same time, although some specimens possess the distinguishing odor of copaiba, they do not upon close examination seem to have any other mark which would indicate that they belong to the order *Copaifera*. Mr. Conroy has tested many samples, and failed to detect any of the distinguishing features of the genuine copaiba. The specimens exhibited give some idea of the wide range of quality of the product. They range from a thin, pale yellow to a thick, dark, molasses-like, and dirty fluid. Several parcels have been offered upon the London and Liverpool markets, and sales have been made at about 1*s.* per pound. Judging from all the details we can gather, we may safely conclude that the so-called African balsam copaiba is not derived from a *Copaifera*, and we must await further particulars before we can assign to it a therapeutic or commercial value. [We have learned that a product probably identical with the above has been collected in the Upper Congo district, also along the Kassai. But no reliable clue regarding the botanical origin has reached us.—ED. AM. DRUGG.]

Kola Nuts.—While it is necessary to be constantly on the watch for spurious or sophisticated drugs, it is quite possible to go to the other extreme, and it is very necessary to guard against this, or injustice may be done to genuine articles. This has been clearly demonstrated by the history of the kola nut during the past two or three years. The sample shown here represents a parcel of kola nuts imported into this market some time ago. It was accepted by the brokers, by the wholesale dealers, and by the trade generally. One buyer, however, objected to them, saying that they were not the seeds of the *Cola acuminata*, and declined to receive them. On being pressed for his reasons for rejecting the drug, he forwarded a sample of the so-called true kola nut which had been pronounced genuine by a leading London authority.

The specimens he forwarded were evidently cotyledons of a nut which had been composed of two cotyledons, whereas the parcel he had rejected were composed of nuts containing three or more cotyledons. A sample of the rejected parcel was forwarded to Kew, and was pronounced genuine and composed of seeds of the *Cola acuminata*. Meanwhile both samples had been submitted to microscopic examination, and revealed an identity of structure which placed their relationship beyond doubt. Still there was the fact that one sample was a true dicotyledon, while the other was composed of more than than two cotyledons. To clear this point up, the matter was again referred to Kew, and attention drawn to the correspondence in structural characteristics and the difference in the number of cotyledons in the two specimens. This elicited the fact, which appears to have been overlooked by the compilers of our books on materia medica, that the seeds of *Cola acuminata* divide into from two to five or more cotyledons (*Kew Bulletin*, November, 1890, page 253). This established the genuineness of the discredited kola nut, much to the satisfaction of all concerned. The buyer kept and used the disputed parcel, and nothing further has been heard on the point.

This case clearly indicates the necessity for looking most carefully into the doubts which may be cast upon the genuineness of any drug, and should a drug inspector be appointed for the port of London (as recently suggested) it would be well that his attention should be called to this fact before he reports upon so-called spurious kola nuts.

The Temperature of Drinks.—A writer in a German paper gives the following as the proper temperatures for different sorts of beverages: Water, 54°; seltzer water and beer, 57° to 60°; red wine, 62° to 66°; white wine, 60°; champagne, 46° to 50°; coffee, 73° to 79°; beef tea, 100° to 125°; milk, 60° to 64°; hot milk, 93° to 95°.

African Copaiba, So-called.

DURING the past year two consignments at least of a copaiferous (?) oleoresin have been exported by the Niger Company from West Africa* to the port of London, the produce, it is said, of the district of the Niger basin. The substance has been offered on several occasions as balsam copaiba without finding a bidder or purchaser at public auction. The appearance of such an import is interesting, inasmuch as several species of *Copaifera* are known to be indigenous to tropical Africa,† but the information as to the production of oleoresins by these species is very meagre, the only description of a secretion of economic value being given by Bennett, who describes *Copaifera Guibourtiana*, known by the natives as the "Kobo" tree, as yielding a copal.

Of the closely allied genus *Hardwickia*, the oleoresin of certain species of which resembles that of the *Copaifera*, as far as I can learn only one African variety is known, viz., *Hardwickia Mannii* (Oliver, "Flora of Tropical Africa," ii., 316), and it is doubtful whether even this is not a species of *Copaifera*.

With such scanty botanical information available, and the exact district of their production at present unascertained, it appeared desirable to compare these African oleoresins with the products of the South American species of *Copaifera*, with the object of determining their relationship or otherwise by physical or chemical characteristics.

The two oleoresins from West Africa, which I will designate as (A) and (B), were dissimilar in appearance, due probably to a difference in the manipulation of the two samples.

(A) was light brown in color, slightly fluorescent, having an aromatic, somewhat piperaceous odor, a specific gravity of 0.987 at 15° C., and, on standing, deposited a quantity of small crystals. It yielded by distillation with steam 37.9 per cent of a pale-yellow essential oil, which when dried over chloride of calcium distilled at 264° to 270° C. and had a specific gravity of 0.9173 at 15° C. The oil was readily soluble in petroleum ether and ether (0.735), less soluble in pure ether (0.720), and only slightly soluble in alcohol or glacial acetic acid. The crystals deposited by the oleoresin were repeatedly crystallized from petroleum ether, and, when pure, had a melting point of 124° C. (uncorrected), had a faint yellow color, and were distinctly acid in reaction.

(B) was darker in color, more markedly fluorescent, possessed an aromatic, piperaceous, but slightly empyreumatic smell, and, on standing, nearly half its bulk separated as an illy-defined crystalline mass. The specific gravity of the oleoresin, thoroughly mixed, was 1.002 at 15° C.; but after removal of the deposited mass, the fluid portion had a specific gravity of 0.992 at 15° C. It yielded by distillation with steam 40.2 per cent of a pale-yellow essential oil, boiling between 264° and 270° C. (uncorrected), and having a specific gravity of 0.9188 at 15° C. The oil was readily soluble in petroleum ether (0.735), less soluble in pure ether (0.720), and only slightly soluble in alcohol or glacial acetic acid.

The crystals were purified in the same manner as those from (A), and found to have the same melting point (124° C.) and to be distinctly acid. This melting point is somewhat close to that of a crystalline resin obtained by Flückiger from gurjun balsam (m. p. 126° to 130° C.), but that body was indifferent, whilst this from the African oleoresin is markedly acid, distinctly electrical by friction, and appears to resemble in general characters the oxycopaivic acid (melting point about 120° C.) found by Fehling in a deposit from a Para copaiba. From neither of the oils—of specimens (A) and (B)—could crystals be obtained by passing dry hydrochloric acid gas through them, either at normal temperature or immersed in a freezing mixture, as has been stated to be the case by Soubeiran and Capitaine (*Journ. Pharm.*, 26, 70) with Maracaibo oil under similar treatment, but they gave reddish-brown fuming liquids, agreeing with the beha-

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* We had been informed that it came from the Upper Congo. This may have been an error of our correspondent.—ED. AM. DRUGG.

† "Pharmacographia" (1874), p. 200; Bentham and Hooker, "Genera," i., 585; DeCandolle's "Prodromus," ii., 509; Oliver, "Flora of Tropical Africa," ii., 313.

vior of an oil distilled from Para copaiba by those authors.

I have failed, notwithstanding several attempts, to obtain crystals of a hydrochloride by this method when operating on the oil obtained from the Maracaibo variety, and in this respect, therefore, my experiments confirm those of Brix (*Monatshefte* [2], page 507), and show that the formation of this crystalline body from pure copaiba oil appears somewhat uncertain.

A ready test produced by Flückiger (*Pharm. Journ.* [3], 7, 2) for distinguishing between copaiba and gurjun balsams, and which has been made official in the United States Pharmacopœia, consists in adding to a solution of the balsam in carbon bisulphide a drop of nitric and sulphuric acids previously mixed and cooled, when in the case of gurjun balsam an intense violet color is produced.

On applying this test to samples (A) and (B), in comparison with specimens of Maracaibo and Para copaiba, a brownish-red coloration was produced.

A sample of gurjun balsam, however, gave a decided and permanent violet.

Neither of the two oleoresins (A) and (B) lost their fluidity when heated in a sealed tube to 220° C., whilst gurjun balsam similarly treated became quite solid.

That the two African oleoresins are identical, therefore, admits of little doubt, and their general characteristics resemble in most particulars the South American copaibas, the only commercial varieties with which we have been previously acquainted.

I hope shortly to publish the results of a chemical examination of the crystals and volatile oils obtained from the two African oleoresins.—JOHN C. UMNEY in *Pharm. Journ.* (December 5th).

Note on Ergot of Rye.

THE following is taken from a recent editorial in the London *Chemist and Druggist* (December 5th):

This autumn, after a brief period of suspense caused by the uncertainty whether the failure of the rye crop in Russia would cause an abundance of ergot or none at all, the balance of opinion slowly inclined toward the latter view. Opinions rapidly matured into conviction, and the advance in the price of ergot, slow and halting at first, has now grown into a steadily progressing movement. So far as it is possible to judge of the situation at present, there is every reason for believing that the rise will go on without encountering any serious obstacles, until it is possible to form an opinion of the prospects of the coming crop; that is to say, until well into the summer of 1892. There is some possibility, of course, that stocks of ergot large enough to influence the market are kept concealed by astute speculators, but the likelihood of such a circumstance lessens day by day. It is equally possible that speculators may succeed in temporarily forcing the price of ergot to such a figure that consumers will refuse to buy, although there is probably a good deal of latitude between the present quotation and one which would be considered prohibitive, especially as there is no effective substitute in therapy for either ergot or its preparations. At the commencement of the harvesting season there was a general expectation that the unusual dampness of the summer would have favored the formation of the ergot fungus; and such, indeed, seems to have been the case in all European countries except Russia, where the rye crop failed, not from excess of moisture, but from a precisely opposite cause. Now, it is upon Russia that the world mainly depends for its requirements in ergot of rye. How large a quantity that country produces is not even approximately known, as the exports of ergot are not specially defined in her official statistics. The average Russian production is probably not less than 150,000 to 180,000 pounds per year, representing an approximate value of £10,000. It is not unlikely that, if the Russian ergot were all carefully picked and brought into commerce, the production would be largely increased, for it is only a few seasons ago that some of the northern departments of the empire began to offer ergot upon the market, the crop having formerly been destroyed because it was thought to be valueless. Since 1880 Russia has had only three heavy crops of ergot, while in five seasons her production has been much below the average. The absolute loss of a Russian crop, however, such as appears to have occurred this season, has not been heard of for many years. For this reason one would be inclined to place some faith in the statement which has been circulated, that the reason why there has been no Russian ergot is because the exporters of rye, in order to take advantage of the short period of grace allowed before the ukase prohibiting the export of the cereal came into force, gave themselves no time to separate the ergot from the grain, but shipped it right away to Germany, where most of the ergot (such as did exist) was subsequently picked out. There may be some truth in this statement, but at present Russian ergot appears to be obtainable neither in Germany, nor Moscow which is the Russian centre for the article. At the same time it should be stated that for several years Russian ergot has been losing its importance as an article of trade in the English market, and the Spanish, which is the variety most generally used in America, has taken its place, while Italian and other Continental varieties are also increasing in importance to some slight extent. It is to Spain, then, that we must look for supplies to tide us over the season of scarcity. Here, again, we have no statistics to guide us in estimating the production. But that the Spanish crop has been a good one this season is pretty certain. Ergotization is a very common disease in the rye of the northern provinces of this country, and it is stated upon good authority that of every three ears of rye in the province of Galicia one is afflicted with the disease. The United States is by far the largest consumer of ergot of rye, the average imports being now about 125,000 pounds a year, while fifteen years ago they were barely 25,000 pounds. If the demand for ergot from America should continue to advance in the same proportion (which one can scarcely think likely) prices may be permanently affected.

Tumenol.

THE success that has attended the introduction of ichthyol, which is understood to be a product of distillation of a peculiar sulphurous bitumen, appears to have suggested experiments in a similar direction, with the result of the appearance of another claimant on the therapeutist's attention, under the name of *tumenol*. According to Dr. Spiegel, all mineral oils contain a class of unsaturated hydrocarbons capable of reacting towards sulphuric acid, and of being converted by it into still less saturated derivatives; these hydrocarbons are said to constitute the mother substance of tumenol. For the preparation of the tumenol compounds the mineral oil is first treated, for the separation of phenols and acids, with soda lye, and afterwards, for the removal of bases and pyrrol-like bodies, with 70 per cent sulphuric acid. Upon treating the purified oil with concentrated sulphuric acid, the unsaturated hydrocarbons undergo sulphonation, with evolution of sulphur dioxide, and a dark-colored, acid syrup is formed, from which can be separated, by washing with water and solution of sodium chloride, a mixture of sulphone and sulphonic acid. This is treated with soda lye to convert the sulphonic acid into a salt, and then shaken with ether, which takes up the sulphone and leaves the sodium salt in the aqueous liquid. The "tumenol-sulphone," after purification, is described as being a dark-yellow, thick liquid, readily soluble in ether, ligroin, and benzol. Although it is insoluble in water, it is taken up by an aqueous solution of tumenol-sulphonic acid, to which it imparts a strongly bitter and aromatic taste. Upon analysis, tumenol-sulphone gave figures approximating to the formula $(C_{11}H_{17}O)_2SO_2$. Tumenol-sulphonic acid is obtainable as a dark powder having a peculiar faintly bitter taste. It is easily soluble in water, and the solution can be evaporated to the consistence of an extract without separation taking place; it is, however, precipitated from solution by acids or salts. In a faintly acid solution of gelatin it forms an elastic, caoutchouc-like precipitate that can be drawn out into threads. The alkali salts of tumenol-sulphonic acid are easily soluble in water, from which they can be salted out like soaps. The salts of the alkaline earths and heavy metals are insoluble in water, with the exception of those of antimony and mercury. The acid converts corrosive sublimate into calomel upon

boiling; it also reduces ferric chloride to a ferrous salt, and permanganate to a lower oxide of manganese, and upon boiling with an acidulated solution of bichromate, is converted into an insoluble oxidation product. The figures obtained in an analysis of the calcium salt corresponded to the formula $(C_{41}H_{61}O_{21}SO_3)_2Ca$ [?]. "Commercial tumenol" contains both the sulphone, which from its consistence is designated "tumenol oil," and the sulphonic acid, which has been called "tumenol powder." As, however, the acid in the powder form is relatively costly, it is used also in various conditions. These compounds have recently been the result of a report to the German Dermatological Society by Prof. Neisser (*Deutsch. med. Wochensch.*, November 5th). Prof. Neisser states that he has experimented with two forms of tincture, one containing about 10 per cent of tumenol, the mother substance, dissolved in a mixture of equal parts of ether, alcohol, and water, and another in which glycerin was substituted for the water. The former when painted on a surface dries readily and completely, but the latter forms a somewhat smeary coating which holds a dusting powder well. Of the sulphonic acid, aqueous solutions were used. The tumenol is said to make up very well with zinc-gelatin, and all three preparations were used in the form of ointment, pastes made with zinc oxide and starch, and soap plasters; but for the ointments and pastes the commercial tumenol or the tumenol oil (sulphone) was found most suitable. Prof. Neisser considers the tumenol compounds to differ entirely from ichthyol, since they depend for their therapeutic action rather upon their powerful reducing properties than upon the combined sulphur. Summing up the results of two years' experience, he says that tumenol will be found useful in nascent eczema, erosions, excoriations, superficial ulcerations, and in different forms of pruritus.—After *Pharm. Journ.*

Solanaceous Alkaloids.

THE surprising statement, made rather more than three years since by Messrs. Schering, that belladonna root contains practically only hyoscyamine, and that atropine obtained from it is probably a product of change occurring during the manufacture, suggested to Dr. Schütte to undertake a thorough investigation of the subject, and he has just published his results in a long and interesting paper (*Archiv*, October 30th, p. 492). In the first place, the influence of methods of preparation upon the conversion of hyoscyamine into atropine was tested. Dr. Will has already stated that contact with an alkali is sufficient to effect this change, and Dr. Schütte found that the same result is produced by repeated recrystallizations from acidulated water, as well as by long keeping of hyoscyamine in solution or in the form of gold salt. It was further ascertained that in fractional precipitations the gold salt of atropine, if any should be present, is thrown down before that of hyoscyamine, and the inference has been drawn that if any atropine gold salt be thrown down at the commencement of the precipitation in a properly conducted experiment, it represents atropine existing as such in the plant part, and that any obtained from a mother liquor after the removal of the hyoscyamine represents a product of alteration. The influence of age and period of vegetation upon the alkaloids in the roots was next investigated. It was found that young, fresh roots (one to two years) collected from a basaltic district, whether gathered in the spring, summer, or autumn, contained only hyoscyamine, but that older roots (eight years and upward) always contained, besides much hyoscyamine, a little already formed atropine. Similar results were obtained with roots from old cultivated plants and roots that had been kept several years. The amount of alkaloid was considerably greater in the roots collected in summer than in the spring roots, and fell off again in the autumn, but more rapidly in the old than in the young roots. The averages obtained at the three periods were for young roots 0.127, 0.452, and 0.458 per cent, and for the old roots 0.174, 0.358, and 0.280 per cent. Spring and autumn leaves of the belladonna plant both contained principally hyoscyamine, with small quantities of ready formed atropine. As to the fruit, the unripe berries of the wild plant contained chiefly hyoscyamine and a little atropine, but the ripe fruit contained only atropine. The ripe berries of cultivated plants, however, yielded both hyoscyamine and atropine, while the ripe berries from var. *lutea* gave atropine and a small quantity of a base probably identical with Hesse's atropamine. Turning to other solanaceous plants, fresh and old stramonium seeds yielded chiefly hyoscyamine, together with small quantities of ready formed atropine and scopolamine. The leaves of the potato plant (*Solanum tuberosum*), besides yielding betaine, gave indications of the presence of an alkaloid having a mydriatic action, which seemed also to resemble a mydriatic base present in *Solanum nigrum* and *Lycium barbarum*. The leaves of *Nicotiana Tabacum* also yielded traces of a mydriatic alkaloid, and lastly the seed, herb, and root of *Anisodus luridus* all contained hyoscyamine only.—After *Pharm. Journ.*

The Manufacture of Beet Sugar in Utah.

WHEN the farmer brings the result of his season's toil in the beet fields to the factory, the beets are first weighed and then stored in the long sheds, which have been made frost proof by a double wall filled with cinders, and a roof covered with earth. As the beets are required at the factory they are thrown into a shallow sluiceway which runs from the shed to the factory, and enables the beets to float from the point where they are received to the place where they are needed. They are taken from the sluiceway by a wheel elevator and dropped into a washer, which is a trough-shaped contrivance with revolving arms. The beets are then thrown out automatically into a bucket elevator, which conveys them to the top of the building where the cutter is located. This machine cuts the beets into slices about $\frac{1}{8}$ of an inch thick, $\frac{3}{8}$ of an inch wide, and of various lengths. The sliced beets now pass from the cutter through a revolving chute into the great diffusion battery. This consists of twelve wrought-iron cells, each holding about 126 cubic feet, and having an open manhole on top with swinging cover. The bottom is arranged to open and close by hydraulic pressure.

It is in this diffusion battery that the interesting process of separating the saccharine matter from the beet is performed. This is done by the use of water heated to a certain degree, from which it must not vary. As the water pours through the cells for the first time it carries with it about one-half of the saccharine matter, while the other half is left in the beet. The hot water is turned on ten times in succession, each time taking more of the sugar, until at last it has extracted all but about $\frac{1}{2}$ of 1 per cent of the sweetness which the summer's sunshine has stored in the beet. The juice now flows to an automatic register, which registers the quantity and temperature of the juice and draws out a sample for use in the laboratory. From the register it passes to a heater which is heated to 90° C., and it then passes into the carbonators or clarifying pans, where a portion of the impurities is removed from the juice by the application of lime. Fortunately a majority of the impurities combine with this substance and settle at the bottom of the pan. The sucrate of lime is decomposed by pumping carbonic acid gas through the liquid, which forms the excess of lime into carbonate of lime. When this operation is completed the whole contents of the carbonator, 180 cubic feet of juice, or 1,350 gallons, are pumped by means of a plunger pump, having a capacity of 8,000 gallons per hour, through a mammoth filter press. This removes the residue of the clarification, the juice being treated twice with carbonic acid and once with sulphuric acid. In the last process all of the lime is removed.

The diluted liquor is now concentrated in a quadruple evaporator to a 50-per-cent solution. From here there are two operations. To make the very finest quality of sugar it is necessary to run it over boneblack, which removes impurities that cannot be taken out in any other way. After this process the liquor is as clear as water, and the juice is then boiled into sugar in a vacuum pan. This is a closed kettle, 10 feet and 6 inches in diameter and 23 feet high, and holds 35 tons of sugar. In this kettle the sugar is granulated, and forms a product technically termed melada, a mixture of molasses and sugar contain-

ing about 75 per cent of the latter. The sugar is then dropped into a mixer, which holds the entire contents of the kettle. The next step is to remove the syrup, which is done with Weston centrifugals. The sugar is then partially moist, and the moisture is removed by passing the product through a Hersey sugar drier. It then passes perfectly dry into the sacks, each of which holds exactly 100 pounds. Here samples are taken and marked by the internal revenue officials.

It takes exactly thirty-six hours from the time the beets leave the shed until the sugar is ready.—After *The Irrigation Age* and *Sci. Amer.*

Methyl Blue and Methylene Blue.

Both of the substances mentioned in the title have been introduced into medicine, but we have reason to know that the two substances are not only constantly confounded by wholesale druggists and dispensing pharmacists, but that the impure commercial articles are still kept in stock by many and dispensed.

Methyl blue has been recommended as an antiseptic in diphtheria and certain other diseases. Dr. H. Beyer (of Staten Island), in a paper published in the *Medical News*, first proposed it for this purpose, and recommended to apply it in form of a mixture containing 2 parts of methyl blue and 98 parts of powdered sugar.

Methylene blue is given internally, in doses of about 3 grains (in pills or capsules), in rheumatism of the joints and muscles; also as an analgesic, administered hypodermically in doses of $\frac{1}{10}$ to 3 grains; and has recently been lauded as an antimalarial remedy in doses of 1½ grains, the daily dose not to exceed 10 grains.

Methyl Blue is the sodium salt of triphenyl-[rarosaniline sulphonic acid. It is also known as Me ylblue M B I for cotton, and in German also under other names. It constitutes a dark-blue powder, soluble in water, forming a blue solution. The latter is not altered by hydrochloric acid. Addition of soda renders the solution reddish brown. In concentrated sulphuric acid, methyl blue dissolves with a reddish-blue color, which turns to blue upon dilution with water.

Methylene Blue, also known as Æthylenblau, Methyleneblue D B B, is a salt of tetramethylthionine (a body classed with the so-called thiazines, which are sulphurated derivatives of the aniline series). The most usual salt met with in the market is the double chloride of *zinc* and tetramethylthionine. According to Schultz ("Chemie des Steinkohlentheers," ii., 762), the simple hydrochlorate of the base is also put on the market under the name of methylene blue. But we have so far not encountered the latter, all the samples which have come under our notice being the *zinc* salt, leaving on combustion about 10 per cent of zinc oxide. It is possible that a zinc-free methylene blue is now on the market, but, as we have not had any occasion to examine the article for some months, we cannot be sure. At all events, it behooves those who use methylene blue internally to know whether they are given a zinc salt or not. Hence every fresh supply should be examined for zinc, which is easily accomplished by igniting a small weighed quantity in a crucible (which may be much facilitated by moistening the carbonized and cooled mass occasionally with a little water and nitric acid) until all signs of carbon have been burned off. The residue, if consisting of zinc oxide, will give the appropriate reactions.

We are unable to say whether the first proposers of methylene blue as an internal remedy were aware of the presence of zinc in the commercial article, or whether they used a zinc-free product. At all events, we are aware that many physicians who used the substance in this country employed the commercial article containing zinc. The question is now, What difference in therapeutic action is there between the two products, that containing zinc and that free from it? And did the beneficial effects of the remedy depend on the organic coloring matter exclusively, or on its combination with zinc? This is a problem to be solved by the pharmacologists.

A Chinese translation, by Dr. Hunter, of the British Pharmacopœia has been recently published.

Refining Camphor in Japan.

A VERY important change has recently taken place in the method of preparing camphor for market. The principal source of supply is Southern Japan, and for many years it has been exported from there in the crude state only. Recently, and since the great advance in the price of the drug, caused by its consumption in the making of celluloid, plants for the refining of camphor have been set up in Japan. In April last complete machinery, including stills, engines, and boilers, was manufactured at Pittsburg, Pa., for Messrs. Gribble & Nash, of New York, and sent to Hiogo, Japan. The complete machinery weighed about 55 tons and cost $75,000. Dr. A. G. Boyer, who had previously given much time and thought to devising improved methods of procuring the crude gum and refining it, went to Japan as the chemist in charge of the enterprise. Previous to setting up this plant near Hiogo, all camphor left Japan in a crude state and was refined either in Europe or in this country. This caused a great deal of waste from evaporation, and has prompted capitalists to do the refining where the drug is produced, and thus avoid the waste and loss which have heretofore attended its transportation. About the same time that this plant was sent to Japan, another one, purchased by native capital, was started. This shows how quickly the natives of Japan adopt improved methods of trade and manufacture, rather than be outdone by their foreign competitors.

The American refinery is composed of machinery made under the patent of W. F. Simes, of Philadelphia, and will be able to produce from 50,000 to 75,000 pounds of refined camphor a month.

The products are of two kinds. One is sublimed and called flowers of camphor, which slightly resembles desiccated cocoanut, except that it is of a gummy nature. The other kind is pressed into cakes of varying shapes and sizes, but generally about the size of a cake of toilet soap. The flowers of camphor are prepared especially for use in the manufacture of celluloid. Since the American refinery has got into successful operation, a company has been formed with a capital of $100,000 to prosecute the business.

Just what effect the new method of refining camphor will have upon the price of the article seems to be a matter of considerable uncertainty, the market value having fluctuated greatly at times, owing in part to the manipulations of speculators, and also to reports of its use in making smokeless powder and for other purposes.

It is now said that camphor has proved unsatisfactory in smokeless powder, because it evaporates after the powder is placed in the cartridge.

The methods of procuring the crude camphor in Japan are of a very primitive character, though sufficient quantities are always forthcoming to meet the demand of trade.—*Scient. Amer.*

Benzo-Naphthol.

A REPORT of this new compound, by MM. Yvon and Berlioz, appears in the *Répertoire de Pharmacie*. It is a benzoate of beta-naphthol prepared by the interaction of beta-naphthol with benzoyl chloride, the effect of which is that the benzoyl group (C_7H_5O) takes the place of a hydrogen atom in the beta-naphthol. Its constitution is, therefore, $C_{10}H_7C_7H_5O_2O$. The resulting product, purified by crystallization from alcohol, is obtained in white, microscopic crystals, but may also be got in prismatic needles if desired. It is without odor, and is practically insoluble in water, soluble in rectified spirit to the extent of 2 or 3 grains in an ounce, and soluble 1 in 3 of chloroform. Benzo-naphthol is proposed as an intestinal antiseptic preferable to beta-naphthol. In the system benzo-naphthol is split up into beta-naphthol and benzoic acid, the latter being eliminated by the urine as benzoic and hippuric acids. The therapeutic trials made with it show that it is as efficacious as betol and beta-naphthol, diminishing the toxicity of the urine considerably. It may be given to the exten tof 5 Gm. per day to adults, each dose of 50 Cgm. being enclosed in a cachet or suspended in a suitable mixture.—*Chem. and Drugg.*

Fig Wine.

Dr. J. H. Vogel, of Coimbra, Portugal, makes an interesting report on the preparation and properties of fig wine in the *Zeitschrift für angewandte Chemie* (1891, No. 21):

It had been repeatedly reported that fig wine was used in some countries, particularly Algiers, as an adulterant for wine made from grapes. P. Carles states that the two kinds of wine cannot be readily distinguished from each other, except by the fact that fig wine contains mannite. The cultivation of the fig tree in Portugal is very extensive, and the fruit is of very great commercial importance. Though no actual wine has so far been made from it in Portugal, yet a very pleasant sort of brandy is prepared from it which is much in use.

There are over one hundred varieties of figs known. Among them are many which apparently bear two different kinds of fruit. This is due to the fact that only those fruits which begin to develop early in the spring reach maturity in the autumn, while the remainder, which may have attained the size of a hazelnut in autumn, become arrested in their development until the following year, some of them ripening in June, others in July, and still others in the fall of the year. These fruits are preferred to the "one season" figs, the best being considered those which ripen earliest in the second season. These surpass all others in size, percentage of sugar, and the delicacy of taste.

Dr. Vogel chose the kind of figs last mentioned for his experiments. Forty figs, of dark-brown color, each weighing about 100 Gm., were crushed by hand on July 20th, and triturated until the whole mass was soft and homogeneous.

It then possessed the peculiar odor characteristic of fresh figs, which is disagreeable to many persons. The mass was transferred to a tall glass capable of holding about 12 quarts, and mixed with 300 Cc. of water at a temperature of about 100° F., in which 3 Gm. of tartaric acid had previously been dissolved. The glass was a little more than half full. It was covered so as to still permit the free access of air. After a few hours' standing, fermentation was seen to begin; and this continued so energetically that the vessel was nearly filled to the brim on the following morning. At the bottom, up to about the middle, the glass was filled with a red wine-like liquid, and on its surface was the mark of the crushed figs. After twenty four hours the fermentation was completed. The liquid was now strained through a cloth and poured back into the glass to settle, which required forty eight hours, yielding a copious sediment and a clear liquid looking exactly like red Bordeaux wine. This vinous liquid, which had a specific gravity of 1.057, had completely lost the disagreeable odor of figs. It was drawn off into bottles (amounting to about 4 quarts altogether), and the latter set aside so that the secondary fermentation could take place. This did not begin for a long time, the temperature having never been over 68° F. during daytime. On August 11th, however, the temperature rose to 86° F., when the secondary fermentation set in very energetically. In all the bottles there was noticed a continuous development of gas. On August 26th the temperature became cooler again and fermentation ceased. The ripe wine was then siphoned off.

This fig wine had an agreeable, refreshing, acidulous taste, not differing from the light red wines from grapes produced in the same vicinity; only its color was less dense, and the odor and taste of figs were no longer recognizable. A small quantity, on distillation, furnished a "brandy" of exceedingly pleasant odor and taste.

On August 26th it was found to possess a specific gravity of 1.023, and to contain 4.05 per cent. by weight, of alcohol. Its acidity corresponded to 0.52 per cent calculated as sulphuric acid. A repeated analysis, made on September 15th, showed but little alteration, though the bottled wine had meanwhile deposited a colorless sediment.

Dr. Vogel agrees with P. Carles that the presence of mannite in fig wine is theoretically a safe feature to distinguish it from grape wine. But as the isolation of the mannite appears to be rather difficult, to judge from Dr. Vogel's statements, it remains to be seen whether other criteria are not more easily attainable.

Dr. Vogel thinks that fig wine will have a great future, in view of the rapid spread of phylloxera among the vineyards of the very countries in which the fig culture is furthest advanced.

Note on Piperazine.

Regarding the fate of piperazine, the new remedy recommended in uric acid diathesis, in its passage through the human organism, Alb. Schmidt and G. Wichmann report (in *Berichte d. D. Chem. Ges.*, 1891, 3237) that it is remarkably resistant to decomposition. After a single dose of 3 Gm. of piperazine, the latter can be detected in the urine with certainty even after six days. The principal quantity is excreted within a few hours after it has been taken; another portion appears to be retained for a considerable time in the blood. The best reagent for showing its presence is solution of potassio-bismuthic iodide. The urine is first freed from the phosphates of earthy metals (calcium, etc.) by a few drops of soda solution, the filtrate then acidulated with hydrochloric acid, warmed to about 40° C., and then mixed with the reagent. The amorphous precipitate (which forms even in normal urine) does *not* contain any piperazine. This is filtered off. After a while there will appear in the filtrate characteristic groups of needles. When only very small quantities of piperazine are present, it is advisable to distil the solid residue (left after the evaporation of the urine) with caustic alkali and sand [the latter having first been added to facilitate the evaporation], and then to test the distillate in the manner above directed.

The Origin of Citric Acid in Milk.

As a supplement to our article entitled "Citric Acid as a Normal Constituent of Milk," on page 284 of our present volume, the following abstract of a paper by A. Scheibe (after *The Analyst*) will be of interest.

With ordinary fodder citric acid occurs in goat's milk, as in cow's milk, to the extent of 1 to 1.5 Gm. per litre; but the amount is liable to considerable fluctuations, being sometimes twice as great as at others (calculating it upon the total solids). It does not appear to be derived from the citric acid present ready formed in the fodder, as it also occurs, though in smaller quantity, in human milk. Moreover, citric acid added to the fodder does not increase the amount found in the milk, and feeding exclusively upon materials free from citric acid has no effect upon the quantity excreted. Milk secreted in a state of hunger contains the normal amount of citric acid. Citric acid in milk is apparently not derived from the cellulose undergoing digestion in the intestines of herbivora, as excretion goes on when food is withheld or meal substituted for ordinary fodder; this is consistent with the fact that in the human subject (where no digestion of cellulose takes place) 0.54 to 0.57 Gm. of citric acid per litre of milk is formed.

Remedy for "Bumping" during the Boiling of Liquids.

The plan advocated consists in placing a glass tube, about 5 to 8 Cm. in length and 5 to 10 Mm. in width (the exact dimensions depending upon the bulk of liquid to be boiled) and closed at the upper end, resting against the side of the flask or other vessel to be heated, so that it stands nearly vertical with its open, sharp-edged end pointing downward. Boiling goes on quietly when once started, the bubbles making their appearance at the lower end of the tube. On cooling, the liquid rises in the tube, which must therefore be raised and allowed to again become full of air before beginning the boiling again. The tube is best provided with a hook of platinum wire fixed in the upper end for ease of handling. The device is said to be efficient even for liquids containing heavy precipitates, such as barium sulphate and lead sulphate, and is also recommended for the Reichart-Volluy process.—E. Pieszeczek in *Chem. Zeit.*, 1891, 1126.

[*Note by Ed. Am. Drugg.*—This is a method published many years ago. It is, however, not as well known as it ought to be.]

Strontium Salts in Medicine.

A DISCUSSION that has arisen in France out of the use of strontium compounds in the plastering of wines has turned attention to the physiological action of strontium salts. As a result several communications on the subject have been presented almost simultaneously to the Société de Thérapeutique (*Rev. Thérap.*, November 15th, p. 604). In one, M. Ferré states that he has obtained with *strontium bromide* the same advantages as with the alkaline bromides in the treatment of epileptics, whilst it was better tolerated by the stomach. In a second, M. Sée stated that 2 to 5 Gm. of the bromide, dissolved in water and taken in three doses in the course of the day, had been very useful in relieving dyspepsia, gastralgic pains, cardiac complaints, and Bright's disease. *Iodide of strontium* had also, in his hands, proved useful in heart disease. In a third, M. Paul reported that he had found the administration of a solution of strontium in lactic acid to cause the rapid and complete disappearance of albumin from the urine. In a subsequent communication, M. Dujardin-Beaumetz confirmed M. Paul's statements to the extent that in his experience the administration of the *lactate* had always promptly reduced the albumin by one-half. This result he appeared disposed to attribute primarily to the favorable effect of the salt on the digestive organs, which reduced the production of toxines to the minimum. M. Paul uses a solution of 50 Gm. of "lactostrontiane" in 250 Gm. of water, the dose being a teaspoonful night and morning.—*Pharm. Journ.*

Calcium Salicylate.

A DEMAND for calcium salicylate having arisen in Aus tria, where it is ordered alone or in conjunction with bismuth salicylate as a remedy for diarrhœa and in gastro-enteritis, a formula for its preparation has been published by Mr. Torjescu (*Zeit. öst. Apoth. Ver.*, November 10th, p. 630). A filtered solution of 200 Gm. of sodium salicylate in 5,000 Gm. of distilled water is treated with 10 Gm. of liquor sodæ, specific gravity 1.160, and into this is filtered a neutral solution of calcium acetate made by heating 100 Gm. of pure calcium carbonate with just sufficient dilute acetic acid to dissolve it completely. The resulting precipitate is collected on a filter, washed several times with cold distilled water, dried at a temperature not exceeding 35° C., and preserved in a well-closed vessel. The product is described as a white, odorless and tasteless, crystalline powder, soluble in the proportion of 1 in 2,000 in cold water, but readily forming a clear solution in water containing carbonic acid; also very easily soluble in dilute acetic, nitric, or hydrochloric acid. The dose is from 0,5 to 1.5 Gm. (8 to 24 gr.) —After *Pharm. Journ.*

Metallic Sulphides Dissolved by Hydrogen.

AT the recent meeting of the British Association, Prof. Ramsay drew attention to the remarkable properties which are exhibited by the liquids obtained by passing excess of hydrogen sulphide into solutions of certain metals, and afterward expelling the excess of hydrogen sulphide by hydrogen. Mercuric sulphide treated in this way dissolves to a dark-brown solution. Antimony and arsenic sulphides also dissolve. On examining the mercury solution under the microscope, brown particles are seen in a state of rapid motion. With antimony solution particles are not visible, but a sort of granular movement is to be seen. With arsenic solution nothing is visible.

On dialysis of the solution, none of the metal diffuses if the solution is pure; in the case of the antimony diffusion takes place if tartaric acid is present. These solutions are readily precipitated by the addition of certain salts, but, although the antimony solution becomes nearly solid on precipitation, no accompanying rise of temperature can be noticed. Also, no depression of the freezing point is observed with such a solution. The specific gravity of the solution, however, is higher than that of water. The experiments show the power of the solvent to bring about extremely fine mechanical division of a substance, and suggest the possibility of further atomic or ionic separation. The particles of quasi-dissolved substance are believed to be in a state of rapid but circumscribed motion.

Analysis of a Mixture of Wax, Paraffin, Stearin, and Stearic Acid.

THREE or four Gm. of the mixture are treated with 60 Cc. of boiling alcohol. On cooling, the alcoholic solution is titrated with semi-normal alkali, phenolphthalein being used as an indicator, and the stearic acid is thus determined, since 7.8 Cc. of semi-normal alkali = 1 Gm. of stearic acid. To the above neutralized alcoholic solution 3 to 4 Cc. of sodium hydroxide solution (50 per cent) are added, and the mixture is boiled in a reflux apparatus for one hour; the alcohol is now distilled off, and the residue is mixed with dry silica and asbestos dried at 100° C., and exhausted with hot chloroform. The subsequent distillation of the chloroform leaves a residue of paraffin and myricic acid, which is weighed, and the paraffin is determined in a portion of this residue by heating it in a reflux apparatus with 4 to 5 Cc. of glacial acetic acid for one hour. The solution is now placed in a graduated tube, to which the rinsing of the flask with warm glacial acetic acid is added, and the tube and contents are placed in a water bath at 90° and frequently agitated. The volume of separated paraffin is read off and determined, since 1 Gm. of paraffin occupies under these conditions 1.35 to 1.4 Cc., and the myricic acid is taken by difference. The portion of the alcoholic residue which is insoluble in chloroform consists of sodium stearate, stearin, and cerotic acid. This is dissolved in boiling water, filtered from the silica and asbestos, and the solution decomposed by the addition of a slight excess of nitric acid. The fatty acids are filtered off, and the filtrate is neutralized, treated with plumbic acetate, and the glycerol contained therein estimated by potassium dichromate; from the glycerol the stearin is estimated on the assumption that 5 Gm. of glycerol = 95 Gm. of stearin, and the cerotic acid is taken by difference.—F. JEAN in *Bull. Soc. Chim.*, after *J. Chem. Soc.*

Volatile Organic Matter in Drinking Water.

A PAPER on this subject, recently read by W. C. Young, F.I.C., before the Society of Chemical Industry, had special reference to a simple method for estimating the dissolved, fixed, and volatile organic matters in water. Much of the paper need not be referred to, as it was of purely local interest. The point of it concerned the determination of total organic matter. Mr. Young takes 1 L. of water, adds 0.5 Gm. of dried and ignited sodium carbonate, then distils the water in a conical iron still, of about 2 L. capacity, attached to a tin worm condenser. The distillate is received in a graduated measure, and when 970 Cc. have been collected the heat is removed, the still disconnected, the contents and washing placed in a platinum basin and evaporated to dryness on a water bath. A little pure distilled water is then added, the mixture is filtered through an asbestos plug into a platinum basin, dried on a water bath, and subsequently heated for an hour in an air bath at 150° C. After cooling thoroughly in a good desiccator, the basin and contents are weighed in a quick balance. The residue is then ignited at a low temperature, cooled and weighed, and the loss noted. The ignited residue is then dissolved in water, excess of sulphuric acid added, and standard solution of potassium permanganate (1 Cc. = 0.0001 Gm. O) added until the color remains permanent after five minutes. The weight of oxygen lost, thus ascertained, is deducted from the loss on ignition, and the difference is the organic matter. To determine the fixed organic matter the same course is followed, except that the sodium carbonate is not added until the concentrated water is transferred from the iron still to a platinum basin.

To determine the volatile organic matter the distillate from the last-mentioned process is placed in the still together with 5 Gm. of sodium carbonate, and distilled until about 25 Cc. remain, afterwards proceeding as before, except that it is unnecessary to ascertain the oxygen lost by ignition. The result represents about two-thirds of the total volatile organic matter present; further small quantities can be recovered from the distillate by repeating the process. Mr. Young has tried other kinds of stills than that mentioned, but found none so satis

factory. He had also tried the influence of nitrates, silica, sodium chloride, and the like upon the distillate, but they in no way vitiated the results. Determinations with cane sugar, grape sugar, asparagin, uric acid, and albumen showed that the "organic matter" came out with wonderful constancy. He next submitted to the meeting a series of four tables containing analytical results with the various London waters, and he compared some of his results with those of Frankland and other official chemical examiners of London waters. The effect of the comparison was to show that in nearly every instance "organic matter" comes out too low in the official reports.

The author then called attention to the aërated waters which are offered as *being made with distilled water*. Since his investigation clearly proves that volatile organic matter is always found in the distillates of London waters, it seemed to be desirable to determine how far such matters are found in these aërated waters. The manufacturers claim for these, amongst other advantages, perfect purity and complete absence of organic matter. Samples of aërated distilled water from two of the largest manufacturers showed 0.483 and 0.434 grain per gallon in sample A, and 0.378 and 0.302 grain per gallon in sample B.

Finally, he referred to the property which barium hydrate and other earthy hydrates have of fixing such volatile matter.—After *Chem. and Drugg.*

Determination of Nitric Acid in Water.

G. LOOF dissolves 0.2 Gm. of sodium salicylate in 5 Cc. of the water in question, and adds 10 Cc. of colorless sulphuric acid, so that it may flow slowly down the side of the glass, forming two strata of liquid. The two strata are then mixed by shaking the glass, and if nitric acid is present the entire liquid takes a color which varies from red to pale yellow, according to the proportion of the acid; 1 part of nitric acid may thus be detected in 100,000 parts of water.—*Pharm. Centralh.*

F. MUSSET states that on testing water for nitrous acid by means of zinc iodide and starch solution with acetic acid, the reaction produced becomes continually darker and darker. This change is due to the reducing action of bacteria upon the nitrates present.—*Chem. News.*

Rapid Valuation of Commercial Peptones.

ALCOHOL of 95 per cent added in excess to concentrated solution of meat peptone precipitates undigested *albumens, albumoses, pure peptone*, and *gelatin*. On the other hand, the alcohol separates by solution:

1. The extractive principles of meat (*carnine, creatines, creatinines*, etc.).
2. The products of decomposition of albumens (*leucine, tyrosine, aspartic acid*, etc.).
3. The products of decomposition of gelatins (*alanin, glycocoll, amido-butyric acid*, etc.).

It follows from these facts that alcohol constitutes an excellent agent for the valuation of commercial peptones; the larger the amount of the precipitate the greater will be the strength of the peptone in the nutritive elements —albumoses, peptone, acid albumens.

We must remember that albumoses and true peptone are only found in peptones produced by the digestion by means of gastric juice; the acid albumens which enter into the composition of artificial peptones (*vapeur peptones?*) have apparently, as far as assimilation is concerned, no higher value than ordinary albumen.

The determination in a peptone of the matter soluble in alcohol is made by dissolving 2 Gm. of peptone, calculated as dry matter, in about 10 Cc. of water. This solution is precipitated by 100 Gm. of alcohol, and the mixture is allowed to stand for twenty-four hours in a cool place. The alcoholic solution becomes quite clear: it is decanted, and the precipitate washed, the alcohol distilled off, and the residue evaporated to dryness in a basin on a water bath.

The desiccation is completed in an oven at 105° to constant weight. In the same way, the weight of the alcoholic precipitate is taken after complete drying.

A well-prepared meat peptone should not give above 30 per cent of alcoholic extract, but commercial preparations are found which yield as much as 60 per cent. These extracts then contain, besides creatines and normal extractive bases, great quantities of the products of decomposition of the albumens (*leucine, tyrosine, aspartic acid, caproic acid*, etc.), and of the gelatins (*glycocoll, leucine, alanin, amido-butyric acid*, etc.) of muscular tissue.

In fact, a few drops of the alcoholic solution evaporated on a glass slide show under the microscope leucine and tyrosine with their characteristic forms, besides other things.

These excrementitial products, destitute of alimentary value and formed in defective digestion at the expense of the albuminoids and colloids of meat, represent the deficiency in gelatin, albumen, and peptones of these preparations.

The estimation of the alcoholic extract allows, as will be understood from the above, of the determination of the dietetic equivalent of all preparations of meat peptones. It gives at the same time valuable indication as to the nature of the digestive operations.

It will be remarked that in very acid and long-sustained digestions the alcoholic extract of the peptone will be rich in the products of decomposition, whilst the concentrated solution of peptone ($\frac{2}{10}$) will only yield a small precipitate with the alcohol (30 to 40 per cent at most).

On the contrary, in digestions which are faintly acid and well regulated in regard to duration, temperature, weight of pepsin, hydrochloric medium, etc., the alcoholic extract which the peptone yields will be small; but, on the other hand, the precipitate of gelatin, albumoses, and peptone very abundant (rising to 70 per cent).

These assays are very interesting. We recommend them to our confrères. By a simple precipitation with alcohol they will be enlightened as to the respective merits of the preparations of peptone which they purchase.—A. DENAYER in *Journ. de pharm. d'Anvers.* After *The Analyst.*

The Estimation of Milk Sugar in Milk.

THE main difficulty in the determination, as ordinarily carried out, is in obtaining a filtrate sufficiently clear for titration. As prepared by the usual methods, it is opalescent or even quite turbid from the fat which passes through the filter.

It has been found, by making use of the well-known property of aluminium hydrate, to drag down precipitates, and by following the recommendations of Radlescu (*Mittheil. d. pharm. Inst.*, Erlangen, iii., 93) regarding the amount of acid, intensity and duration of heating, all of which are of great importance in the rapidity and completeness of the curdling, that a clear filtrate is readily obtained.

The method is as follows: 25 Cc. of the milk are mixed with 15 Cc. of "milk of alumina," and 0.5 Cc. of 25 per cent acetic acid added, the mixture stirred and heated five to seven minutes in a water bath the temperature of which is 85° C.; 100 Cc. of water are now added, and the mixture is heated in boiling water for ten minutes, with frequent stirring. It is thoroughly cooled under the tap, allowed to settle, and decanted through a plaited filter (Schleicher & Schüll, No. 597) into the 500-Cc. graduated flask, being careful to bring as little precipitate upon the filter as possible. The operations of boiling and filtering are repeated three times, and the filtrates made up to 500 Cc. It is then ready for titration by Fehling's solution in the usual way.

The "milk of alumina" is prepared by precipitating at the boiling temperature 125 Gm. ammonia alum with ammonium hydrate, washing the precipitate by decantation, and making it up to 1 L.

The method has been in use by the students at the Massachusetts Institute of Technology for a year and given very satisfactory results.—AUG. H. GILL, in *Journ. Anal. and App. Chem.*

Death from Antikamnia is reported (*American Practitioner*). This drug is said to be composed of about 8 parts antifebrin and 2 parts bicarbonate of soda.

Detection of Fats Mixed with Vaseline.

CAUSTIC alkalies are without action on the normal constituents of vaseline in the process to be described, whilst they combine in definite proportions with the fats to form soaps. Experiment has determined that 10 Gm. of these fatty compounds absorb 1.635 Gm. of potassium oxide, K_2O, and the calculations are based on this. A standard alkali solution is prepared by dissolving about 20 Gm. of potash in 100 Cc. of 90-per-cent alcohol. This is standardized by means of standard sulphuric acid. A neutral alcohol is prepared by dissolving 1 Cc. of phenolphthalein in 500 Cc. of 90-per-cent alcohol, then alkali is stirred in drop by drop until a very slight rose tint is produced. Ten Gm. of the vaseline to be tested are placed in a 200-Cc. porcelain basin, 10 Cc. of standard alkali added, the basin being kept on a water bath during the whole process; 50 Cc. of neutral alcohol are now added, the solution heated nearly to boiling, and the mixture stirred for eight minutes, when the saponification will be complete, and normal sulphuric acid added drop by drop until *all color* has disappeared. This point is very important. If too long a time has been taken it may be necessary to add a fresh portion of neutral alcohol to replace the loss by evaporation. The amount of sulphuric acid run in, subtracted from that required to saturate 10 Cc. of alkali solution, multiplied by 0.0047, gives the quantity of potash absorbed by the fats in 10 Gm. of vaseline, and this number divided by 0.0163 gives the percentage of fats in the vaseline.—MR. VIZERN and C. NICOLAS in *Journ. de Pharm.*, after *J. Chem. Soc.*

Assay of Sodium Nitrite.

PROF. G. LUNGE has had occasion to make a critical study of the various methods, so far published, for estimating the amount of the nitrous radical in nitrites. His results are published at length in the *Zeitschrift für angewandte Chemie*, 1891, No. 21. We shall omit here the description of the methods which were found to be either too circumstantial or not sufficiently accurate, and only quote the process of Lunge, which was shown to be the most accurate and simple.

Its chief feature is this, that the solution of the nitrite is added from a burette to a previously measured and warmed semi-normal solution of potassium permanganate strongly acidulated with sulphuric acid. If the permanganate solution were added to the solution of the nitrite, some of the nitrous compounds would miss oxidation by the permanganate and be lost.

In the case of nitrites easily soluble in water, it is only necessary to make an aqueous solution of known strength, preferably 1 per cent. In the case of difficultly soluble nitrites—as, for instance, in the case of silver nitrite—it is best to dissolve this in sulphuric acid with such precautions that no nitrous compounds can escape. In this case, of course, it is not necessary to add any sulphuric acid to the permanganate.

Prof. Lunge gives the following analytical data, which show the reliability of the process:

Strength of the permanganate solution employed, about semi-normal, 1 Cc. of it being equivalent to 0.027636 Gm. of metallic iron, or to 0.017039 Gm. of sodium nitrite ($NaNO_2$). Sulphuric acid was added to the permanganate and the mixture heated to between 30° and 40° C.

The sodium nitrite solution was 1 per cent in strength.

Permanganate used.	Sodium nitrite sol. required.	Percentage of $NaNO_2$ calculated.	Difference from mean percentage.
Cc.	Cc.		
10	18.13	93.98	− 0.16
10	18.10	94.14	0.
10	18.10	94.14	0.
20	36.19	94.16	+ 0.02
20	36.18	94.18	+ 0.04
20	36.15	94.27	+ 0.13
		Mean, 94.14	

The inquiry was mainly undertaken for the purpose of deciding a dispute between a manufacturer of the salt and a firm consuming large quantities of it.

A New Method of Estimating Urea.

K. A. H. MOERNER and JOHN SJÖGVIST have devised a new method of estimating urea which is specially intended for use when accurate results are required.

The most commonly used method at the present time is that by means of hypobromite, and measuring the nitrogen given off, each cubic centimetre of which is reckoned as equivalent to 0.0027 Gm. of urea. It is, of course, well known that this method is affected by errors, but the latter are not considered of sufficient importance to render this easy and rapid method unsuited for clinical use. In fact, it is not likely that the hypobromite method will readily be displaced by any other, unless absolute accuracy is required.

The two physiologists above mentioned, however, were in search of an *accurate* method, sufficiently easy and rapid to take the place of the elaborate methods heretofore necessary.

Among these is that of Bunsen, and this has long been regarded as one of the most exact on record. But it also suffers from some sources of error.

The general principle by which the authors operate is to determine the nitrogen of the urea separately from nitrogen derived from other sources. The method of execution is as follows:

Five cubic centimetres of the urine are mixed in a flask with 5 Cc. of a saturated solution of barium chloride containing 5 per cent of barium hydrate. Next, 100 Cc. of a mixture of 2 parts by weight of 97-per-cent alcohol and 1 part of ether are added, and the whole set aside, well stoppered, until the following day. The insoluble residue is then collected on a filter, and washed with enough of the ether-alcohol. If the filter pump is used, only about 50 Cc. of the liquid will be required. Without the pump more liquid will be found necessary and the washing consumes more time. The filtrate is deprived of ether and alcohol by distilling at a temperature which should under no circumstances exceed 60° C. This is best accomplished by connecting the receiver with the filter pump. If no filter pump is available, it is usually preferable to evaporate the ether and alcohol on a water bath, since it is easy here to adjust the temperature below 60° C., while this may be exceeded during ordinary distillation.

When the residue measures about 25 Cc., a little water and calcined magnesia are added, and evaporation continued until the vapors no longer show an alkaline reaction (from escaping ammonia). This is usually the case before the liquid has been concentrated to about 10 Cc. (The addition of calcined magnesia, above directed, is absolutely necessary if there is any considerable amount of ammonia present.) The concentrated residue is transferred into a flask, water being used to wash the capsule, then mixed with a few drops of sulphuric acid and evaporated on the water bath.

The residue in the flask now contains no other nitrogenized substance besides urea. This is determined by Kjeldahl's method, viz., heating with strong sulphuric acid until the nitrogen compound is entirely decomposed, sulphate of ammonium being formed; this is then decomposed by soda, the ammonia caught in standard acid, and from its quantity the amount of the nitrogenized compound calculated.

Accordingly, 20 Cc. of pure, concentrated sulphuric acid are added to the contents of the flask, and the latter heated over a naked flame until the liquid has become colorless. Pure soda (free from ammonia, the absence of which in all ingredients must be assured) is now added, and the escaping ammonia caught in a measured quantity of volumetric sulphuric acid. The excess of the latter, left unsaturated, is afterwards titrated back by baryta [standard soda would seem to us preferable, as this will not cause a precipitate], litmus being used as indicator.

The authors tested the method upon pure urea. By Kjeldahl's method this yielded, as a mean of 5 determinations, 46.801 per cent of nitrogen, theory requiring 46.74 per cent.—From *Skand. Arch. f. Physiologie* (by F. HOLMGREN), 8vo, Leipzig, 1891.

The Odor of Iodoform can be removed from the hands and other parts, it is asserted, by washing thoroughly with linseed meal water.

And Now It's the Druggist's Turn.—The *British Medical Journal* says that the municipality of Seville has decided to establish two public pharmacies where poor patients may have prescriptions made up for nothing. The local druggists are up in arms against the proposal.

Ether Drinking seems to be gaining ground in Paris and is attracting some attention. A death due to this habit was lately recorded, and a number of cases of lunacy are attributed to it. According to *L'Eclair*, the ordinary dose of ether here as an intoxicant is from 5 to 10 Gm., taken at intervals during the day.

It is consumed neat, with water, or mixed with cognac. The origin of the habit is traced by the journal named to Father Mathew's temperance campaign in Ireland in 1842.—Paris Correspondent of *Chem. and Drugg.*

A New German Pharmacopœia.—On October 23d the Medical Committee of the Permanent Commission for the preparation of a revised German Pharmacopœia commenced its sittings, under the chairmanship of Dr. Köhler. The number of new remedies proposed to be placed on the new list was 1,603, but after prolonged consideration only 42 were deemed worthy of official sanction. These will now have to be considered by the pharmaceutical committee.—*Chem. and Drugg.*

Adulteration of Coffee.—Chemistry has once more been called in to detect a new adulteration in coffee. This fraud, though only practised to a limited extent, is sufficiently ingenious. It consists in adding to a certain proportion of sound coffee beans a quantity of berries already exhausted in the manufacture of "coffee extracts." These useless berries are roasted, with a little sugar added to give the requisite brown tint. If, however, the latter berries are exhausted by ether, they will yield hardly 1 per cent of ethereal extract. As sound coffee produces from 13 to 14 per cent, not only can the fact of adulteration be thus proved, but its proportion may at the same time be readily established.—*Chem. and Drugg.*

Ammonia as a Fire Extinguisher.—Mr. Jeanneau, fils, pharmacist, Savenay (Loire Inférieure), reports an interesting instance of the efficacy of ammonia in the extinction of a conflagration which might have proved disastrous. He had some 50 gallons of gasoline, half in a galvanized iron cask and the remainder in glass receptacles. One of the latter being broken by the heat of the sun, the liquid that escaped took fire, and a serious conflagration was threatened. Mr. Jeanneau took from his laboratory a bottle containing nearly a gallon and a half of ammonia, and threw it over the flames, and in less than a minute they were extinguished. It was, in fact, so suddenly and thoroughly quenched that it was at once possible to enter the room and remove the galvanized cask, which was half full of gasoline, and which just before had been shooting out flames some 9 feet high.—French Correspondent of *Chem. and Drugg.*

Ammonia-free Water.—A very easy way of obtaining ammonia-free water, which I have used for some time and have never seen mentioned, is to acidulate the water, before distilling, with sulphuric acid. The acid holds all ammonia in the retort, the first portions even of the distillate being ammonia-free. But this acidulation naturally causes the nitric and nitrous acid in the water to distil over. For some purposes, however, nitrates are not objectionable. At the laboratory of the Iowa Agricultural Experiment Station, at Ames, Iowa, when we wish to obtain chemically-pure water for any use, we take distilled water which is nitrate-free, acidulate it with sulphuric acid, and distil, at once getting *pure* water.—D. B. Bisbee in *Journ. of Anal. and Appl. Chem.* for August.

Valuation of Indigo.—Two lots, of 1 Gm. each, of coarsely powdered indigo shavings are taken. In one the moisture and ash are determined; the other is first pulverized dry, then levigated with water, the suspended portion poured off, and the process repeated until all is transferred to a 200-Cc. flask. Three Gm. of zinc dust and 60 Cc. of commercial strong ammonia are then added, the flask filled to ½ Cc. above the mark, and shaken occasionally until reduction is complete (possibly from half an hour to two hours). Fifty Cc. of the clear solution are then put in an evaporating basin, 5 or 6 drops of ether added, and air blown through to precipitate most of the indigotin. A moderate excess of hydrochloric acid is now added, the whole heated to boiling, and the precipitated indigotin collected on a tared filter, dried at 100°, and weighed.—F. A. Owen in *Journ. Am. Chem. Soc.*

A Snuff for Acute Coryza.—Tissier recommends the use of the following snuff for the relief of a cold in the head:

℞ Menthol	gr. vi.
Powdered Boracic Acid	ʒ ij.
Subnitrate of Bismuth,	
Powdered Benzoin	āā ʒ iij.

A good-sized pinch of this may be snuffed up five or six times a day. If desired, 1 grain of morphine and half a drachm of calomel may be added to the mixture, the addition apparently increasing its efficacy in certain cases.

The Administration of Bromides.—The *Bulletin of Pharmacy* for September, 1891, calls attention to Prof. Feré's recent suggestion concerning the administration of bromides. Believing that large doses sometimes induce unpleasant symptoms in consequence of a condition of sepsis in the intestinal tract, he recommends the administration of intestinal antiseptics, like naphthol, to remove drug intolerance due to the foregoing or other cause. The following formula has given excellent results, especially in the treatment of epileptics:

℞ Potassium Bromide	ʒ 1½
Beta-Naphthol	ʒ 1
Salicylate of Sodium	ʒ ½

Mix and divide into three doses, one dose to be given three times daily.

It is affirmed by Feré that this treatment is curative and preventive. To this formula some French physicians add $\frac{1}{30}$ of a grain of quinine sulphate. Eczema and psoriasis following the use of borax also disappears if the intestinal tract is rendered aseptic.

New Drugs.—In one single number a leading Vienna medical journal manages to rake together the following new remedies: Cocainum hydroiodicum, æthelenum bromatum, ammonium embelicum pulv., methylblue, apocodeinum hydrochloricum, aurum tribromatum, benzanilid, citrarinum puriss., chloral-ammonium, ephedrin pseudo-hydrochloricum, and a new spirit of bryony. Yet it failed to mention dermatol, europhylene, somnal, hypnal, phenocoll, and piperazidine. Vienna journalism is slow.

German Spas.—The following are the numbers of visitors reported at a few of the German watering places during the past season: Aachen, 33,155; Colberg, 7,787; Elster, 4,621; Landeck, 2,394; Nauheim, 8,455; Oeynhaussen, 6,148; Reinerz, 3,388; Salzbrunn, 3,548; Soden, 1,226; Sylt, 7,411; Wildungen, 3,438.

Dangerous Pets.—A French scientist declares that the domestic pets of the world carry at least 30 per cent of the common contagious diseases from house to house.

Fissured Nipples.—The following lotion for sore nipples is recommended in *Nouveaux Remèdes:*

℞ Balsam of Peru,	
Tincture of Arnica	āā ʒ i.
Lime Water	ʒ i.
Oil of Sweet Almonds	ʒ ij.

A Death from Cocaine.—A young physician in Bournemouth, England, died recently from the effects of cocaine which he had applied too freely to an aching tooth.

The Salts of Strontium, particularly the lactate, are said by Drs. Dujardin-Beaumetz and Paul to diminish albuminuria about one-half.

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EDITORIAL.

IN an editorial in our issue of December 1st of last year, we had occasion to refer to a report on the spelling and pronunciation of chemical terms made by a committee of the American Association for the Advancement of Science. We have examined this report somewhat more closely since then, and desire to draw attention to some of the propositions contained therein at the present time, reserving others for later consideration.

The report before us is the final outcome of the work of the committee, after repeated canvassing of the views of the members. It was laid before the meeting of the Association held at Indianapolis in August, 1890, and will shortly be followed by a report covering the work done since that time.

The general principles of pronunciation established and accepted by the committee are the following:

1. The pronunciation should be as much in accord with the analogy of the English language as possible, yet Continental pronunciation should be approached, inasmuch as it is used by a large proportion of the world's chemists, and by a continually increasing number of American chemists.
2. Present usage should be retained as much as possible.
3. Derivatives should keep as far as possible the accent and pronunciation of the root word, in order to make the original sense as clear as possible. This is subordinate to rule 1.
4. Distinctly chemical compound words should retain the accent and pronunciation of each portion.
5. Similarly sounding endings for dissimilar compounds should be avoided, hence -in, -id, -ite, -ate.
6. Utility often determines usage, even when contrary to analogy.

In a general way we may say that the preceding rules meet our approval, though we make an exception with respect to rule 5, as will appear subsequently.

The several propositions enumerated in the pamphlet are accompanied by a record of the votes of the 36 members upon whose contributions the report is based.

We now turn to special subjects and terms. The first novelty we strike is the proposition to spell: chlorin (chlo'rĭn), bromin (bro'mĭn), iodin (ī'odĭn), and fluorin (flū'orĭn), the final *e* being dropped.*

As will be seen later, this spelling will throw these words into one class with a great many others which have heretofore been held apart, namely, alkaloids and so-called neutral principles and glucosides. We fail to see the necessity of the change. The words have become so familiar, even to unprofessional persons, that the present spelling will scarcely be abandoned in general literature. In German the terms are, indeed, very short, viz., Chlor, Brom, Jod, Fluor. If this shortness is to be imitated, the English equivalents could be chlore, brome, iode, and fluore; but we do not propose these in earnest, any more than we approve those proposed by the committee. In this case rule 2 ought to be followed.

The proposition to alter the spelling of sulphur to sulfur, in this word and all its derivatives, is a very wise one and heartily indorsed. In other civilized languages the *ph* in these words is replaced by *f*, and it is even now not uncommon to follow this custom in English, through the effect of copyrighted words, such as "sulfonal."

In this connection we could wish that the same change could be made in the word phosphorus and its derivatives. In several European languages the *f* has taken the place of *ph* in this word, and when the new spelling system now advocated by leading authorities (see especially Prof. W. D. Whitney's notes and list of words in the Century Dictionary, vol. vi., at the end of text) shall come into vogue, we shall surely also write fosforus, filosofy, fonografy, morfine, etc. It would be a comfort, though at first, perhaps, an eyesore, to read and write hypofosforous acid, pyrofosfate, fosfomolybdate, etc.

While we do not urge this change at the present time, we would draw attention to those words containing *ph* in which this compound letter is followed by a *th*. All these words are, of course, derived from the Greek, where a *t* following the aspirate consonant φ (*ph*) must be converted into the corresponding aspirate ϑ (*th*). Thus we have naphtha, naphthol, etc. There is no need to aspirate the *t* in modern languages, and we can save time and space by omitting the *h*. It is, therefore, proposed to write: naphta, naphtol, naphtalin, etc. The committee makes no allusion to these words.

In the case of acids ending in *-ic*, the committee wants the accent put on the penultimate syllable, and in the case of the acids in *-ous*, on the antepenultimate, except in words having two consonants before the *-ous* (coba'ltous). Regarding the words in *-ic*, we are now in the habit of pronouncing these words in the way the committee recommends (phospho'ric, salicy'lic, benzo'ic, tarta'ric, etc.), but in the case of the *-ous* acids we shall have to take a new departure. The committee thinks that the different accent will help to draw attention to the different stage of oxidation. We are asked to write and pronounce: su'lfurous (not sulphu'rous), hypopho'sphorous (not hypophospho'rous), me'rcurous (not mercu'rous), pho'sphorous (not phospho'rous) acid, etc. We think the proposition a good one and worthy of acceptance. There is no violence done to the ear.

The next important proposition made by the committee is to drop the final *e* in the syllable *-ide*, so as to write and pronounce o'xĭd, brō'mĭd, su'lfĭd, ī'odĭd, etc. The reason is, apparently, to do away with the possibility of confounding terms like chloride and chlorite, sulphide and

* The pronunciation of the vowels is shown by the following general scheme: fāte, făt, fär; mēte; mĕt, pīne, pĭn, marīne; nōte, nŏt, mōve; tūbe, tŭb, rūle; mȳ, ў (=ĭ).

sulphite. If we were to introduce the terms oxid, iodid, etc., now for the first time, it would be perfectly proper and advisable to introduce them with this spelling. But now, after such terms as "iodide of potassium" have become household words, to expect that the people at large will gradually be converted to "ĭ'odĭd" of potassium, so as to call for it by this name when purchasing it, is beyond the range of probabilities. Text books on chemistry may have those terms, but they will not go far beyond the precincts of the laboratory. It was an infringement of the principles underlying the compilation of a standard dictionary to recognize such an innovation in advance of its general adoption. Yet this is what the Century Dictionary has done in precisely this class of words, preferring chlorid, oxid, etc., though but few writers so far have employed these shortened forms.

The next proposition is a very important and sweeping one. It concerns the distinction heretofore made between alkaloids, glucosides, etc., and proposes to spell all these words hereafter uniformly with the final syllable *-ĭn*. The committee says: "All chemical compounds ending in *-in* and *-ine* (except doubly unsaturated compounds, like propīne, which are to have the spelling and pronunciation *-īne*) should end in *-in*, and this syllable should be pronounced *-ĭn*. The accent is antepenultimate, except when the penultimate vowel is followed by two consonants, in which case the accent is penultimate. The final *e* in these words should be dropped as of no important significance, for the following reasons: 1. The suggestion of Watts and others to indicate basic substances by *-ine*, and all others (or neutral substances) by *-in*, seems unwise. It makes a difference in spelling, with little or no difference in *pronunciation* on the part of most chemists—a useless and undesirable complication. It demands a very extensive knowledge of the constitution of a great number of compounds with these terminations. It has been partially adopted by many chemists, but not consistently by most, and by many it has never been recognized. 2. All Continental languages use the pronunciation *-ĭn*, and this is the case with not a few words in English, as benzĭne, marĭne, while the American public have instinctively taken up this pronunciation in 'Pearlĭne, Soapĭne,' etc. In general, however, it seems too foreign to English usage to be adopted by a majority of American chemists. The pronunciation *-ĭn* is already common in many of these words, as the halogens [chlorĭn, etc.], anilĭn, hematĭn, pepsĭn, tannĭn, etc., and at the same time presents a near approach to the Continental *-în*, into which it may easily be strengthened if preferred. This reasoning equally applies to the termination *-ĭd*" (see above). The committee therefore proposes to write and pronounce: quĭ'nĭn, theĭn, etc. [of course, also aconitĭn, digitalĭn, etc.] Some of the committee even recommended to write "crystallĭn," though the majority accept both spellings, "crystallĭn" and "crystallĭne."

We have already expressed our views on this matter on page 354 of our last volume. Here we would merely add a few remarks, in the hope that the subject will be well considered in all its bearings before it is regarded as settled. In the first place, it will be quite worth while to ascertain whether Watts' recommendation to distinguish between basic substances and others, by writing the former with *-ine*, and the latter with *-in*, has not received a much more general indorsement than the committee appears to believe. Moreover, we would like to know how we are to distinguish, hereafter, between "hydrastin" (the crude resinoid) and "hydrastine" (the alkaloid), between "aconitin" and "aconitine," etc. In these words, the final *e* is the only visible sign left to enable one to distinguish between two substances of exceedingly different strength. We would have less objection against the proposal of the committee if there had never been any of the so-called resinoids to make confusion. But though they are gradually going out of use, some of them are still in demand, and fatal results might ensue if both terms—that of the weaker resinoid and that of the powerful alkaloid—were confounded. It is true that there is scarcely any or no difference in *pronunciation* between the alkaloid "hyoscyamine" and the eclectic resinoid "hyoscyamin," yet the distinctive spelling is an aid to the *eye*. In fact, it is the only sign by which the terms can be distinguished.

The committee of the A. A. A. S. will perhaps say that they cannot afford to take into consideration the pharmaceutical or medical aspect of these proposed spellings, as they are legislating for the chemist exclusively. But it must not be forgotten that the fruits of the chemist's researches appear in the markets as products to be bought and sold, and to be used in the arts or in medicine. Theoretical considerations should not introduee elements of danger into the employment of these products. Otherwise it might easily happen that the chemist who declined to listen to pharmaceutical or medical arguments would have to deal with toxicological ones, perhaps to his own discomfiture.

CORRESPONDENCE.

ENGLAND.

ARRANGEMENTS have been made by the Council of the Pharmaceutical Society whereby the usual evening meetings, which take place once a month, will be devoted to lectures by professors. In this way Prof. Green, the Society's professor of botany, lectured last month on "The Evolution of the Flower," and now Prof. Armstrong will deliver the next four lectures, it is announced, on "Fermentation." The London *Chemist and Druggist* falls foul of this policy, and deplores the necessity of employing outside talent to lecture to pharmacists. In spite of the trenchant language of its editor, it is hardly to be supposed that the majority of pharmacists here will regret the innovation. One of the greatest difficulties experienced by all the societies in London and the provinces connected with pharmacy is to obtain a good audience when one of their own members reads a mediocre paper on an uninteresting subject. On the other hand, the announcement of a lecture by a clever professor or some other master of the subject always attracts an appreciative audience. It can hardly be argued that a pharmacist learns more from a "Note on Cottonseed Oil in Lard" (which is too often the style of paper we are accustomed to) than from a lecture on some organic subject by such a chemist as Armstrong. There is no wish to discourage research, however humble, but there is equally no need to glorify third-rate researches at the expense of lectures of high educational value. One point the *Chemist and Druggist* distinctly scores upon. One of the reasons for the institution of the Research Laboratory of the Society was distinctly stated to be the difficulty of obtaining papers for the evening meetings. This laboratory costs the Society over $1,500 a year, whilst the result has undoubtedly been distressingly poor. Now it appears they are unable to manufacture results at a sufficiently rapid rate to supply the small demand of five or six evening meetings. For over six months the entire staff of workers in the laborotory, exclusive of the Director, Prof. Dun-

stan, have been occupied with the chemistry of aconite. The net results so far are merely a corroboration of Wright and Luff's classical researches on the aconites and aconitines. A method will doubtless be shortly published of obtaining the pure crystallized aconitine of *Aconitum Napellus*, so as to do away with the dangerous uncertainty attached to the amorphous varieties that at present appear in commerce. But no attempt has yet been made to devise a method of standardizing either extract, tincture, or liniment of aconite, which, from a pharmaceutical point of view, would be immeasurably more important than the purification of the little-used alkaloid.

Another complaint that has been made against the laboratory is that there has been a tendency lately to communicate many of the results directly to the Chemical Society and not to the Pharmaceutical Society. There is some considerable show of reason in this objection, as only last week a paper was read before the Chemical Society by the demonstrator of the laboratory on "The Existence of a Mydriatic Alkaloid in Lettuce." It is obvious that this discovery of traces of hyoscyamine in extracts of lettuce, both of the wild and also garden varieties of lettuce, is of far more interest to pharmacists and medical men than to pure chemists. There was absolutely nothing special in the isolation or purification of the hyoscyamine to call for the special attention of the Chemical Society, and most of the Fellows were of a similar opinion, as the meeting rapidly evaporated during the reading of the paper. To pharmacists it is interesting to learn that lactucarium, for some unexplained reason, does not contain this trace of hyoscyamine, although all the varieties of commercial extracts of lettuce contain it. The amount obtained from the extract of the garden lettuce was not more than 0.02 per cent. This is also claimed to be the first instance of the discovery of hyoscyamine outside the *N. O. Solanaceæ*, and indeed the first occasion of finding an alkaloid in the *Compositæ*.

At the same meeting a lecture was given by Prof. Smithells, of Leeds, on the "Chemistry of the Flame." By a series of ingenious contrivances Prof. Smithells has succeeded in separating the inner and outer cones easily seen in an ordinary Bunsen flame. He was led to this by noticing that when the Bunsen flame was burnt at the top of a long glass tube, about 4 feet in height and 1 inch in diameter, and the supply gradually turned off, the inner cone receded down the tube some distance before going out, and left the outer cone burning some seconds longer. He adapted two tubes, one inside the other, the inner tube reaching to within 6 inches of the top of the outer. The top of the inner tube is plugged lightly with asbestos, and the supply of air is obtained from cylinders of compressed air. The mixture of air and gas is burnt at the top of the outer tube, and forms the ordinary Bunsen or air flame. By judicious regulation of the admixed gases the inner cone is seen to recede down the tube and rests on the asbestos top of the inner tube. This Prof. Smithells called "skinning the flame," as the outer cone still burns calmly at the outside tube. By this remarkable separation of the flame into its two parts Prof. Smithells has been able to obtain many chemical reactions of interest, and by substituting ethylene, benzene, etc., for coal gas, has obtained instructive calorific data. One of the most startling results is the positive evidence that the inner cone is hotter than the outer, a statement which is directly opposite to that contained in chemical text books.

Some time ago in these columns reference was made to the total absence of a wholesale druggists' association in England. The opinion was then expressed that it would be very much better for the trade if such an institution were to be founded. Quite recently a dinner was given by the London wholesale druggists to Mr. Chas. Umney (of Messrs. Wright, Layman & Umney) and Mr. Francis (of Messrs. Hearon, Squire & Francis) as a mark of appreciation of their efforts on behalf of the trade in fighting the railway companies, who had announced their intention to raise the carriage rates all round. The function took place at the Albion Hotel, Aldersgate street, when some forty wholesale druggists sat down. After the complimentary speeches, it was seriously proposed and determined to start a wholesale druggists' club that should meet monthly, and after dinner discuss matters of interest to the trade.

Efforts are being made by the chemical section of the London Chamber of Commerce to obtain further concessions in the matter of rebate for alcoholic preparations exported in bond. At present druggists who possess a compounder's license, which costs $45 per annum, can export tinctures and spirits from their stock, after sampling and examination by an excise officer on their own premises. It is hoped to extend this concession to perfumes, soluble and spirituous essences, etc. The matter is under the consideration of the Inland Revenue authorities.

London Market Report.

MINCING LANE, December 12th, 1891.

The latest advices from Smyrna indicate that considerable sales have been made during the month to America, Constantinople, and the Continent. Over 300 cases had been already shipped and rates remained firm, varying from 1.74 for manufacturing to 2.0 for selected Karahissar. It is possible that prices may decline a little in the spring, if the prospects remain favorable for the 1892 crop. Heavy auctions took place this week in drugs, but the demand was not brisk. Ipecacuanha is again moving upward, whilst the Carthagena and Singapore varieties have also much improved in value. Ergot remains firm at high price, and jalap is also steady. Quinine dull, and cinchona in poor demand. In chemicals the principal increase is in mercury, held second-hand. Messrs. Rothschild's rate remaining unaltered.

The following are current prices:

Acid, Carbolic	per lb.,	$0.14	Ipecacuanha	per lb.,	$1.92
Citric	"	.32	Carthagena	"	1.48
Oxalic	"	.07	Jalap	"	.18 @ .20
Tartaric	"	.26	Nux Vomica	per cwt.,	2.48
Alcohol, 56 O. P.	per gall.,	4.56	Opium	per lb.,	1.96
Antimony Tartrate	per lb.,	.26	Quinine	per oz.,	.17
Balsam Peru	"	1.14	Quicksilver	per lb.,	.42
Tolu	"	.30	Calomel	"	.66
Camphor	"	.34	Corrosive Sublimate	"	.60
Cochineal, black	"	.23	Rhubarb	"	.56
Silver Gray	"	.28	Sarsaparilla	"	.26
Ergot, Spanish	"	.72	Senna Tinnevelly	"	.18
Galls, China	"	.12	Pods	"	.24
Ginger	"	.14	Shellac, TN.	"	.20
Gum, Benzoin	"	.27	Squills	"	.07
Mastic	"	.54	Wax, Bees	"	.27
Myrrh	"	.30			

According to *The Modern Church*, patent medicines are appreciated in Burma. A woman missionary in that country once came upon a village where cholera was raging. Having with her a quantity of a famous pain-killer, she went from house to house administering the remedy to individuals, and left a number of bottles to be used after she had gone. Returning to the village some months after, the missionary was met by the head man of the community, who cheered and delighted her by this intelligence: "Teacher, we have come over to your side; the medicine did us so much good that we have accepted your God." Overjoyed at this news, she was conducted to the house of her informant, who, opening a room, showed her the pain-killer bottles solemnly arranged in a row upon the shelf, and before them the whole company immediately prostrated themselves in worship.

Protoleum; Protol.—H. Hager proposes the name *protoleum*—which would be *protol* in English—as a definite designation of the so-called "quintessential" or "concentrated" essential oils which are put on the market by several firms. Thus he proposes the term Protoleum carvi [we would say Protoleum cari, the latter being the genitive of carum] for the substance known as carvol. Menthol would then be Protoleum menthæ piperitæ; safrol, Protoleum sassafras, etc. This designation has already been adopted by a firm in Cotta, near Dresden.—*Pharm. Centralh.*

That was why.—"Mr. Piggery, of Chicago, isn't a physician, is he, Dukane?"

"Oh, no."

"Then why do you address him as 'Doctor'?"

"He cures hams."—*Pittsburgh Chronicle.*